

REMARKS

In the Listing of Claims, the Applicant has amended claims 1 – 5. Claims 1 – 5 remain pending in the current application.

In the Office Action, the claimed Priority of the application was objected to in paragraph 3, the Information Disclosure Statement was objected to in paragraph 4, the Specification was objected to in paragraph 5, and Claims 1 – 5 were rejected under 35 U.S.C. §112 in paragraphs 7 and 8. Each of these objections and rejections is discussed below.

I. PRIORITY

In paragraph 3 of the Office Action, the Examiner indicates that of the four provisional applications to which the current application claims priority, application 60/347,781 was not completed and therefore its priority status has not been approved.

The Applicant respectfully requests reconsideration. Attached to this paper are a copy of the filing receipt and the return receipt postcard for application 60/347,781. Application 60/347,781 was submitted via U.S. Express Mail on October 23, 2001. The return receipt postcard indicates the USPTO acknowledged receipt of a seven page specification, five pages of drawings and a credit card payment form. The postmark on the return receipt postcard is January 24, 2002. The Filing Receipt for Application 60/347,781 was mailed on February 8, 2002 and indicates a filing fee was received. No Notice to File Missing Parts was ever received by the Applicant, and the Applicant's credit card was charged with a filing fee.

The present application was filed on October 6, 2002, less than one year after the filing date of Application 60/347,781. The USPTO received and acknowledged a specification with drawings and a filing fee was paid and acknowledged. Thus, the Applicant knows of no reason that Application 60/347,781 would not have been pending at the time the present application was filed.

As a historical note, the Applicant points out that during the time period of October 2001 through early 2002, the delivery of U.S. Mail to the USPTO was severely impacted by events surrounding the fear of Anthrax. This explains the extraordinary delay between the October 23, 2001 submission of Application 60/347,781 to the U.S. Postal Service and the mailing of the return receipt postcard by the USPTO over three

months later in January 2002. The Applicant's submission of four provisional applications within a three and a half week period was partially due to the unavailability of any information regarding whether U.S. Express Mail letters had been delivered, lost or destroyed.

II. INFORMATION DISCLOSURE STATEMENT

In paragraph 4 the Examiner objected to the Information Disclosure Statement filed on January 3, 2003. The Applicant submits herewith an Information Disclosure Statement complying with 37 CFR 1.98(a)(1) and the associated fee for submission of an Information Disclosure Statement is enclosed. Copies of the 11 non-patent publications identified in the attached Information Disclosure Statement were previously submitted and remain part of the file of the present application. Consideration of these references is respectfully requested.

III. SPECIFICATION

In paragraph 5a the Examiner objected to the title of the present application due to the use of the phrase "virtual sequentiality" and requested an amendment to the specification. The Applicant has amended the specification to add a paragraph after paragraph 0021. This amendment provides an explicit definition of "virtual sequentiality." This definition is supported by the first sentence of paragraph 0022, which reads "[t]he present invention is responsible for guaranteeing that the results obtained while simultaneously processing multiple packets are the same as would be obtained if all packet processing occurred in the sequence of packet arrival."

While the term "virtual sequentiality" is not a term of art in computer architecture, the word "virtual" is widely used to refer to the logical representation of something that is not physically implemented as such. Consider for example the common terms of "virtual memory" and "virtual machine." The word sequentiality has a plain language meaning of occurring in a sequence. Thus, the term "virtual sequentiality" conveys an understandable meaning, even though it is a term coined by the Applicant. The present amendment to the specification overcomes the objections in paragraph 5a of the Office Action.

In paragraph 5b, the Examiner objected to the Abstract due to the use of the term "ordering conflict." The Applicant has amended the Abstract to replace the term

“ordering conflict” with “memory conflict” for clarity. This amendment is supported by the discussion in which memory conflicts arise due to ordering of packet processing. See for example the discussion in paragraphs 0033 through 0040. Thus, the original disclosure uses the term “ordering conflict” and “memory conflict” synonymously. It is only because of the order in which memory reads and writes are processed that a conflict can arise. The same memory operations performed in a different order would not result in a conflict. The present amendment to the specification overcomes the objections in paragraph 5b of the Office Action.

In paragraph 5c of the Office Action the Examiner objected to the incomplete last sentence of paragraph 0008 of the specification. The Applicant has amended the specification to add the word “processors” which was inadvertently omitted. This amendment is supported by the context of the rest of the sentence. The present amendment to the specification overcomes the objections in paragraph 5c of the Office Action.

In paragraph 5d of the Office Action, the Examiner indicates that it is not clear why the Write Table records information for forwarded reads, as indicated in the first sentence of paragraph 0025 of the specification. The importance of recording information regarding forwarded reads has to do with the fact that in order to guarantee correctness, the system may need to know which reads have relied on the information in the write table. In this way, if a write table entry is determined to have data which is suspect, it can be determined the extent to which this potentially incorrect data has been propagated and may have corrupted other operations.

This principle is described in the last sentence of paragraph 0025 and illustrated in Figure 5. Note that the “Depend” column of Figure 5 represents one embodiment of the forwarded read information that may be maintained in each write table entry. The entry for “r:” indicates that sequence number 3 has been forwarded the data contained in that entry. Thus, when a restart is signaled for sequence number 2, as illustrated in step 6 of Figure 5, a restart is also signaled for sequence number 3, as illustrated. Since sequence number 2 has operated with some data known to be incorrect, it may have forwarded other incorrect data to sequence number 3, and thus sequence number 3 should be restarted as well. This feature of the write table is further explained in

paragraph 0032. Applicants respectfully assert that the first sentence of paragraph 0025 is clear when read in the context of the specification and that no amendments to the specification are necessary to overcome the objections in paragraph 5d of the Office Action.

IV. RESPONSE TO REJECTIONS UNDER 35 U.S.C. §112

In paragraph 7, the Examiner rejected Claims 1 – 5 under 35 U.S.C. §112, first paragraph. Claim 1, as amended recites a step of: “determining if a memory conflict exists between said memory read and said memory write based on a comparison of said first associated sequence number and said second associated sequence number.” Further, Claim 1 recites that the step of “signaling a restart” is based on the “step of determining.” Claims 2-5 depend directly and indirectly from Claim 1 and therefore include all limitations of Claim 1. Applicants assert that Claims 1 – 5 as amended overcome the rejections in paragraph 7 of the Office Action.

In paragraph 8, the Examiner rejected Claims 1 – 5 under 35 U.S.C. §112, second paragraph. With regard to paragraph 8a, Claim 1 as amended recites that the step of “signaling a restart” utilizes a specific sequence number, namely the “first associated sequence number.” With regard to paragraph 8b, Claim 1 as amended recites receiving singular operations: “receiving a memory read” and “receiving a memory write.” This clarifies the association between the memory operations and the sequence numbers. With regard to paragraphs 8c, 8d and 8e, the claims as amended have corrected these antecedent problems. Applicants assert that Claims 1 – 5 as amended overcome the rejections in paragraph 8 of the Office Action.

V. ADDITIONAL REMARKS

The Office Action Summary indicated that the Examiner objected to the Drawings. However, there was no discussion regarding the substance of the objection to the drawings. Nonetheless, replacement drawings are attached to this paper that conform to the margins and labeling requirements of 37 CFR § 1.84.

The reference cited by the Examiner but not relied upon has been reviewed, but is not believed to render the claims unpatentable.

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application are allowable, and a Notice of Allowance is requested.

Respectfully submitted,

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By: _____


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Attachments: Copies of Filing Receipt for 60/347,781 and Postcard (3 pages)
Information Disclosure Statement (2 pages)
Replacement Drawings (6 pages)